

Pressure Ulcers and Decubitus Patients

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Abstract— Introduction: Pressure ulcers means cellular necrosis of a region of the body caused by a deficiency of microcirculation in tissues.

Purpose: The purpose of this study is to present all the data about pressure ulcers and their treatment method.

Methodology: For this reason it was performed an extensive review of the literature that is relevant to the addressed issue.

Results: The pressure ulcer is a localized destruction of the skin area and underlying tissue which develops as a result of prolonged ischemia of tissues because of the pressure on the skin. This occurs in decubitus patients that are placed in the same position for a long time and are involved all systems and organs of the human body such as skin, muscles, bones, circulatory, brain, kidneys and lungs.

Conclusions: The pressure ulcer is a major issue that may cause significant problems for the health of the patient.

Index Terms— pressure ulcer, decubitus patients, treatment, symptoms and risk factors.

I. INTRODUCTION

Immobility means the complete inability or limited ability to move all or a part of the body. When the movement of the body is limited or impossible it may be observed unwanted side effects which can cause serious problems in human health. One of them is the occurrence of decubitus ulcers or pressure ulcers as they are called. [1]

A healthy skin shows significant resistance to infections. Most skin infections begin by abrading the epithelium, while the haematogenous spread of pathogenic microorganisms is less frequent. Many skin ulcers are often caused by vascular insufficiency. Even if bacterial infection of these ulcers is secondary it often extends to the soft tissues and bones. [2, 3]

The issue with the pressure ulcers caused by decubitus position is a multifactorial problem and has to do with the local conditions at the ulcer creation point and the patient's general condition. It must be topically and systemically restored all the parameters which are associated with the pressure ulcers. Note that since the ancient times doctors have dealt with the problem of skin ulcers and tried with the instruments of their time to deal with it. [4, 5]

Important for the development of ulcer is the bacterial condition. From that depends on whether the ulcer will follow a path that the outcome would be healing, or a constantly recurs and worsens. The infection control and maintenance the balance of the bacterial flora of the ulcer will allow a faster and safer recovery. [1]

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Purpose: The purpose of this review study is to highlight the important issues related to pressure ulcers in decubitus patients like: symptoms, treatment and risk factors appearances as well as the role of nurses and general health workers.

Methodology: The study material was the recent articles on the topic that were found mainly in electronic Medline database and the Association of Greek Academic Libraries (HEAL-Link), with the following keywords: pressure ulcers, decubitus patients, treatment, symptoms and risk factors. The exclusion criterion of the articles was the language other than Greek and English.

II. PRESSURE ULCERS- GENERAL INFORMATION

A prolonged bed rest associated with sedation and with an often inevitable immobilization lead to the appearance of pressure ulcers. [6]

The adverse effects of prolonged bed rest involves all systems and organs of the human body such as skin, muscles, bones, circulatory, brain, kidneys and lungs. As pressure ulcer is defined the cell necrosis of a region of the body caused by the interruption of the microcirculation in the tissues of a body area. Pressure ulcers are a condition that concerns the people and the societies of all times, it was considered from antiquity like a curse from the gods or as a test of them. Nowadays, even if the causing mechanism of pressure ulcers is fully understood the problem continues to concern the healthcare professionals and to raise the cost of health services. The reasons causing ulcers are attributed to a variety of factors of which the most important is the exercise of local pressure. There are three parameters related to the exercise of local pressure and development of pressure ulcers: the level, the duration of pressure and resistance of the bones under pressure. [7]

The decubitus ulcers are often called pressure ulcers and can be generated in any age patients are more common in [8]:

- ❖ bed bound patients
- ❖ cachectic patients
- ❖ obese patients
- ❖ debilitated patients and
- ❖ patients with urinary incontinence.

Parts of the body which are more likely to develop pressure ulcers are those found between bony protrusions and skin and those who proportionally support the highest body weight. These are: coccyx, elbows, heel, shoulder, occipital region and spinous processes of the spine. [9]

Prolonged pressure causes local tissue ischemia. First is developed a local edema that further complicates even more the blood circulation in the capillaries, while locally increases the accumulation of metabolic products and as a result of poor circulation those are not discharged. Can be observed a local skin redness which is whitening when it is pressed with a finger while the red color returns when the finger is withdrawn. On touch, the area can be cold or warm and the

patient may complain about pain. In this phase, the relief of pressure can prevent irreversible damage to the tissues. [1] If the pressure continues the degree of redness is rising and may occur superficial skin lesion. Skin color does not change under a finger pressure. If there is no interventions at this stage then the redness of the skin can change to black color which indicates that there may be damage to the skin that does not concern only the epidermis but goes in depth under its the layer tissues. The extension of the caused damage depends on the pressure exerted by the resistance of the tissues and can reach to deep tissue necrosis, damage to muscles, tendons and even bone. The damage at this stage is not reversible. [6]

III. RISK FACTORS

The develop of pressure ulcers depends on the synergy of exogenous and endogenous factors. Exogenous risk factors include factors that affect the outer layers of skin while endogenous factors affect the function of the absorptive capacity of the supporting structures of the skin and especially of collagen and elastic. The exogenous factors are pressure, friction, humidity and shear strength. While the endogenous factors are immobility, malnutrition, advanced age, mental status, increased temperature, psychological factors and lack of skin sensory. [10]

Regarding exogenous factors, the friction that occurs when two surfaces rub against each other because removing of the skin and leads to superficial ulceration in areas such as elbows and heels. In particular this is the case when the patient is placed in a sitting position on the bed or from the excessive massage that can cause tissue damage, particularly in the elderly. The humidity from urine or faces can cause wetting and excoriation on skin which increases the susceptibility of skin abrasion and removal of the skin. [11]

Also, the sheer force is the pressure exerted when the body slides or is moved without being lifted. The skin remains in the same place while the body slips into another direction, which can cause injury and pressure ulcers development. Lastly, the pressure exerted on a part of the body can cause necrosis and develop pressure ulcers.

Regarding endogenous factors, the pressure ulcers are associated with malnutrition, for example with hypoalbuminaemia but also with insufficient calorie intake, vitamins and salts. Elderly patients which are hospitalized primarily in institutions gradually reduce their food intake because they cannot feed themselves and often refuse to be feeder with the help of health professionals. [12]

A proper diet is necessary not only to maintain health but also for the integrity of the skin. For example, vitamin E when is administered in large doses act like an antioxidant, meaning it acquires the ability to neutralize free radicals (FR), which relate to various degenerative conditions such as premature aging. [13]

With ageing occurs progressive reduction in elastic fibers of subcutaneous fat and muscle volume, thinning of the skin, loss of elasticity and delayed wound healing and this leads into increasing the sensitivity of elderly in developing pressure ulcers. Also, the dryness of the skin combined with the reduction in frequency of body bath, it helps create pressure ulcers. [14]

The psychological factor plays an important role in the appearance of pressure ulcers in the patient. When the person is experiencing stress, the adrenal glands increase the

glucocorticoid secretion thereby inhibiting collagen synthesis the tissue is prone to create pressure ulcers. The mental state of the patient plays an equally important role because it affects the mobility and the cooperation of the patient in the provided nursing care of pressure ulcers. Even in paraplegic and quadriplegic individuals due to immobility and loss of skin sensory increases the risk of pressure ulcers. Lastly, when the temperature of the tissue increases is already at risk for ischemia due to pressure and that body area becomes more susceptible to necrosis. [10]

IV. SYMPTOMS

Symptoms which make a health care professional be worried about development of pressure ulcers are the following.

Limited redness, heat development and skin tenderness are the first indicators for pressure ulcers development. The body, defending the causes of pressure ulcer, sends more blood and this explains the redness and increased temperature in that body area. At this stage of pressure ulcer prevention is possible by removing or reducing the cause of pressure and enhances locally the blood circulation by strengthening the patient's body resistance. [14]

But if the causes of pressure ulcer persist then the blood circulation is slowing down locally, developed cyanosis and coldness which leads to reduced or lack of skin sensory. At this stage the pressure ulcer prevention is often difficult, however it's possible if the causes of pressure ulcer are removed or weakened and the effort to enhance blood circulation locally become intense and systematic. If the causes that enhance the pressure ulcers are not adequately or entirely removed then is formed a Escher which is created by the full local necrosis of the skin cells. The ablation of the Escher reveals the wound – pressure ulcer. Treatment at this stage is an urgent need of healthcare professionals. [1, 15]

V. TREATMENT

The basic conditions in the treatment course of a pressure ulcers focus on three recommendations which are [16]:

- ❖ Removing the cause of local burden of blood circulation
- ❖ The maintenance clean and dry of the wound and the surrounding healthy skin
- ❖ Strengthening the local blood circulation.

In the treatment of pressure ulcers recommended is to wash with warm soapy water around pressure ulcer healthy skin and to rub with alcohol. This therapy aims to enhance blood circulation around the pressure ulcer and thus will enhance healing and reduce potential contamination. The treatment of pressure ulcers should respect the rules of sterility in order to prevent an infection .Also, the administration of food rich in proteins and plasma or blood transfusion can stimulate the body and therefore healing. Finally, the proper positioning of the patient in bed prevent pressure on the wound. [16]

When the pressure ulcer has progressed to the tissues, which are deep, the necrotic tissue must be removed. Indeed, sometimes is recommended a debridement or plastic surgery for wound healing. The treatment frequency is adjusted by the patient's condition, the loss of urine and feces, the extent and the state of pressure ulcer, if is dry or has secretions and by the daily emerging needs. Regardless of that a pressure ulcer must

be taken cared three times a day and every time is wet. The treatment of pressure ulcers often depend on the extent of the provided nursing care without omitting the cases in which general factors influence decisively on good nursing care. [7, 17]

Apart from the following ways of treatment there is also a surgical therapy which applies in patients with a general good condition. Surgical therapy has certain advantages which are:

- a) the prevention of the infection spread
- b) the reduction of fluids and proteins loss from the ulcer,
- c) the shortening of treatment time
- d) the reduction of hospitalization costs
- e) facility in patient care.

In surgical treatment of pressure ulcers is made an extensive debridement of the wound by removing the cicatricial connective tissue, respecting bone protrusion and removing osteomyelitis outbreak and in the end the filling of the cavity with local skin or muscle flaps. [16]

VI. EPILOGUE

Pressure ulcers are a major clinical problem with enormous socioeconomic costs. The occurrence of pressure ulcers reflects the quality of health care and the incidence of pressure ulcers is used as a quality indicator. [18]

The creation of educational programs with subjects such as pathophysiology and risk factors of development of pressure ulcers, risk assessment tools and their applications, preventive measures and treatment measures of pressure ulcers are considered necessary in order to effectively manage the problem of nurses and health professionals in general.

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